SUPPLEMENT TO

THE INLAND ARCHITECT AND NEWS RECORD

DESCRIPTION AND ILLUSTRATION IN DETAIL OF

THE FIRST NATIONAL BANK BUILDING, CHICAGO.

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CHICAGO'S MOST MASSIVE AND COSTLY OFFICE BUILDING

D. H. BURNHAM & CO., ARCHITECTS

"Magnitude and order are the essentials of the beautiful in architecture."

A MASSIVE structure of steel and granite looming skyward over 200 feet and covering a large ground area in the heart of Chicago's commercial center. This is the new home of the First National Bank, the great financial institution of the West. It is a marvel of what may be termed American architecture. It combines beauty with utility, strength of foundation and superstructure with power of expression of a great mass in simple lines and magnificent proportions, broken only by horizontal courses essential in the composition. There are few decorative features in the facade; its mass gives the impression of beauty and grace. Like a single glistening shaft its fine proportions hold the interest and command the admiration. The human mind worships grandeur and this is one of the secrets of the power of the old masters over all generations. They were right in principle and practiced the truth. Masters of today will be equally honored if they but hold to the truth.

To even the average man on the street not architecturally informed, who has not traveled abroad and lingered in the old Italian cities, the exterior of this great building suggests that its interior contains a bank of something more than ordinary extent and he would be disappointed if anything of lesser scale or of proportions unworthy of its exterior were found therein. How much more than this is suggested to the imagination of the traveled and trained architect by this great exterior, for the grandeur and dignity is there even though commerce has set her mark thereon, and has very properly been given expression.

Its designer once said that in architecture the biggest thing was the best thing to do—and here he did it nobly—inside and out, and all in one style, on one scale. It is a conception complete. The imagination, the eye and the mind are satisfied and it all seems so simple, logical and natural that the untrained amateur, even the untrained architect, is apt to overlook the fact that the element of simplicity is the most difficult to express. He is likely to overlook the reserve, the unselfish sinking of individual personality, the love of the work above self, the omitting of all petty detail and trivialities that a vain or less great mind would have used by which to express himself. Here the biggest thing (as in the exterior) was the best thing to do and the best thing was done.

THE INTERIOR.

One enters the building with the exterior in his mind, prepared to find just what is there. The three wide entrances invite one from the sidewalk into the hall of the building. Most logically the hall comes out to meet the street and the street seems to be carried into the hall; here the grand Italian staircase seems to greet and to invite on to the bank above. It is so well designed and proportioned that one is on the threshhold of the bank before realizing that the ascent has been made. The rather low one-story hall has been transformed by the great open well of the staircase into a lofty hall of reception with a balustrade and balcony around the stairway.

There is a nobility in the conception; a palatial air about that hall and grand staircase which reminds the traveled and educated architectural mind of the palaces of Naples, of the great Roman and Florentine palaces.

The steps, the balustrade, the panelled walls, the coffered ceiling, the great chandelier, the grilles, the design of the marble floor are all in scale and harmony and thoroughly Italian in the best sense, and almost Roman in its dignity. White marble was the material in which the artist designer chose to express himself. With this the floor contrasts finely; its inlays of Sienna, Verde antique, Numidian marbles in panels, lozenges, discs and bands, in the white ground. Turning and looking down the stairway or upward at the exquisitely panelled ceiling in white and gold, or through the arched opening toward the street, the vaulted gray and gold ceiling of the president's room showing in the view, or gazing at the corner arches and stairs to the directors' rooms on the third story, one is well satisfied and turns back to enter the portals of the great banking room, prepared and expectant.

No one could enter here without being much impressed by its vastness, its magnificent scale and proportion. It is more than impressive, it is grand. It might be the cella of a Greek temple, with its galleries, the ceiling away above where its height allows of an effect of atmosphere such as only very great enclosed spaces have. The designer intended to create something grand without being grandiose and so favored Italian in the treatment. While it has all the classic scale and spirit, it is much more true to the exterior and to its purpose and more natural than the use of any of the classic orders would have been, and fits its time and place and purpose nobly.

In this hall or court of reception again is invitation expressed, it is all left as a great open space for the public, unbroken inside its great square and sided colonnade by any commercial uses or obstruction, while desks, seats and other evidences of its dedication to the public convenience expresses its purpose. Like the atrium or cella of the Roman or Grecian palace is this great hall, around which are arranged the various departments of

the institution; at the sides low counters of marble, without screens of any kind above, admit of a fine view from wall to wall, between the great piers and arches. There are vistas of magnificent distance as one stands inside the doors and looks north, south and west, or up to the white and gold and gray ceiling with its central light of metal and glass amply lighting the whole space and surfaces below.

The whole of this noble court is of white marble. Beyond the court on three sides are loggias containing the banking rooms at the north and south and west ends, all similarly treated. These contain other banking departments which had of necessity to be enclosed with metal screens of fine design, but the height of the ceiling is so great that they only count as furniture for the immense room. Bower-barffed iron and bronze above white marble form counters and screens with mahogany for furniture and fittings. Each side of the central court is marked and formed architecturally by piers, the sides of which are left to form the supports of the semi-circular arches springing from imposts.

The center portion of the piers are absorbed or covered by pilasters which intervene between the arches and rise to terminate as a square pier or column with Corinthian caps gilded and enriched; these support an entablature, above which a trellis of metal with ground glass fillings and supporting ribs suggests finely the Italian open air court adapted to our climate and the beauties of its purpose. Between the columns, and supported by the arches, is a mezzanine balustraded gallery, the open space above which thus exposes the thickness of the wall by the upper part of the square shaft and cap and the equally wide soffits of the arches; also the jambs of their supporting piers give a recurrence of this massiveness of wall. On the other side of these piers back of large pilasters and between the arches on the north, south and west sides of the central court minor pilasters run up and support the soffits and ceiling of the loggias which surround the court and contain the bank's working space; these loggia pilasters are also supported on pedestals. The arch jambs run to a low base above the floor, thus intervening between the different sized pilasters on each side of the piers. The soft gray, white and gold of the coffered ceiling and the panels on the walls of the loggias contrast finely with the white of the marble piers, pilasters, arches and counter fronts and the floor with the white marble and its Verde antique diamonds set in at intervals.

JOHN B. FORGAN
President First National Bank

The president's room fills the space between the outer walls on Dearborn street and the end of the gallery of the stair hall where the arched glazed opening gives a vista of this room's fine groined Italian ceiling. This is a fine room and consists practically of three parts, of which mahogany pilasters and piers form the vertical divisions, and at the same time support the three bays of groined ceiling, arched and vaulted with wide Italian round ribs of fruit and leaves banded, and tied by ornament at the intersection of the groins. The wall is wainscoted in mahogany between the pilasters. The ceiling is decorated in grays and olives in the spandrels, and in soffits of the hoods of vaults. The ribs are decorated and finished in gold with amber or Sienna rubbed into the recessed portions. A recurrence of the gold in decoration on the olive and gray ceiling ties the whole together. The mantel at end of room is effective, as are also the doorways and the pedimented treatment in the one alcove and windows in the three arches on the street front of this room. This room has great height and dignity and is of fine proportion. Three cubes would probably be the definition of its composition, the other one-third of each being groined and vaulted.

The directors' room is lower, which afforded less opportunity for its treatment. The decorators here, as everywhere, have ably assisted the architect, emphasizing the architecture, yet in a quiet, unobtrusive way enriching the projections and with soft grays the recesses and shadows. The walls, however, are not so well treated here and might well have been left as effective background with an almost invisible figure of smaller scale and hardly any variance of colors.

The commercial features of this building are of a high order. They combine the most approved requirements of a great banking house with those of a first-class modern office building. Architecturally the building outranks most of its class. It is a dignified expression upon broad lines of progress in art, combined with a high appreciation of architectural propriety in detail and marks an era of architectural growth in the adaptation of the laws of art to the modern business structure.

INTERIOR DECORATION.

The allegorical paintings for the president's room

are now in readiness for setting. They are most appropriate in design and very artistic in execution, as our illustrations show. The titles are Art, Science, Commerce and Labor, indicating the broad range of the influence of the bank. No business, art, science or labor can be successfully carried on in this day of enterprise without the aid of the bank. It is therefore most fitting that these representations should find their proper niche in this room.

In the ceiling of the directors' room are also two fine mural paintings, entitled "The Proper Use of Money" and "The Wrong Use of Money." These seem also to have found their proper place with the general scheme of color decoration. These mural paintings were all designed and carried out by J. F. Sturdy of Chicago.

The ceiling of the directors' room is divided into three panels, rather oval in form, with strong molded frames, emphasized and connected at the intersection of their extreme diameters with the surrounding cornice and with each other by finely modelled cartouches, very Italian in style. The fine modelling of the relief ornament was executed by McNulty Bros., contractors for all the ornamental plaster work.

In a building of this magnitude and high character there are many interesting problems, not alone in design, but in construction, which require in their satisfactory solution the utmost skill and attention of the architect, the engineer and the contractor. Some of these technical details of construction have been selected for description and illustration.

DANIEL HUDSON BURNHAM
Architect

THE FOUNDATIONS.

In the foundation of most large buildings the engineer and architect find very interesting problems for consideration. It requires the closest study and gravest consideration by scientific and eminently practical men upon the numerous important details that go to make up the proper foundations for a building of this magnitude in order to insure a safe and permanent structure. The latest system to be adopted in Chicago is the caisson foundation and the rule with skyscrapers of the day is to go down to bed rock.

The caissons upon which this building stand are eight feet in diameter and about one hundred feet in depth, resting upon bed rock, making a foundation that can not be disturbed without a great upheaval of the bed rock itself. The amount of steel that was necessary to complete the superstructure was about 10,000 tons. The first section of the building required about 5,500 tons and was set between February 26, 1903, and June 13, 1903, and the last section of 4,500 tons during the time between April 16, 1904, and June 18, 1904; this last was all put up in fifty working days by Charles Volkmann & Co., contractors and iron setters. They used four engines and derricks for this work. Such a feat of heavy construction work has hardly been equaled. The construction of this great building was in charge of the general contractors, John Griffiths & Son.

INTERIOR FINISH AND DETAILS

The great feature of the interior finish of this building is the marble work. It must impress the architect with the magnitude of the work as a whole when he considers that there were used in this work five thousand tons (making one hundred and fifty car loads) of this beautiful white stone, which was transported from the quarries of Vermont for this great structure. In the corridors of the office portion over three miles of marble wainscoting seven feet high was finished and placed by the **Chester N. Marthens Marble** Company of Chicago, which, with the variegated tile floors in the vestibule, and other marble work in the building, made their contract about $250,000. It is said that the cost of all the marble in the interior of this building was about $400,000, which was all furnished by the Vermont Marble Company.

The club room is on the top floor of the building and is a very complete and beautiful rest room for those whose connection with the bank or firms in the building make them eligible for membership to the Mid-day Club. The air of simple elegance that pervades these rooms has an attraction in it that is highly appreciated by the busy man who has a few moments to spare at lunch time. The decorations are light and graceful, enhanced by the large ceiling lights in beautiful designs in tones of amber and green opalescent glass, very rich in color but preserving all the light properties while flooding the rooms with radiant color. It is due to McCully & Miles Company, the ornamental glass designers, who placed this bit of high art work, that they have the credit for this added attractiveness to the room.

AUTOMATIC CARRIERS.

Automatic delivery and exchange of valuable papers from one department to the other in a bank of this magnitude is of great importance to the economical and systematic handling of business. In the system of delivery in the First National Bank every possible precaution was taken to make the system perfect. The work was done under

the supervision of a most reliable superintendent. This system is operated by compressed air, which forces the carriers through the tubes connecting the official's desk to the central station. Each carrier is marked for its proper destination, consequently there are no lapses of memory at the central station. The tubes are distributed and sent to their destination in about ten seconds from the time they leave the sender, thus making a sealed communication and special delivery from one officer of the bank to another. In the daily transactions of a banking business there are thousands of messages with important papers that must be given immediate attention and delivered in person at the expense of valuable time, or by messenger at the risk of costly mistakes, all of which is eliminated by this system, one man's signature being a check against the other's memory. The system was installed by the Lamson Consolidated Store Service Company.

Located upon the ground floor, with an entrance from Dearborn street, are the two great vaults containing over two thousand square feet. They are built of steel and iron four inches thick and then covered with masonry three feet in thickness. The massive doors, each weighing thirty-four tons, are protected by four movement time locks, with all electrical connections.

THE POWER PLANT—GENERATORS AND MOTORS.

The basement floor, containing about 40,000 square feet of space, was used to accommodate the mechanical plant—W. L. Jackson, engineer in charge—including all requisite machinery, boilers, motors, etc., for the production of steam and electricity for light, heat and power adequate for the needs of this great building.

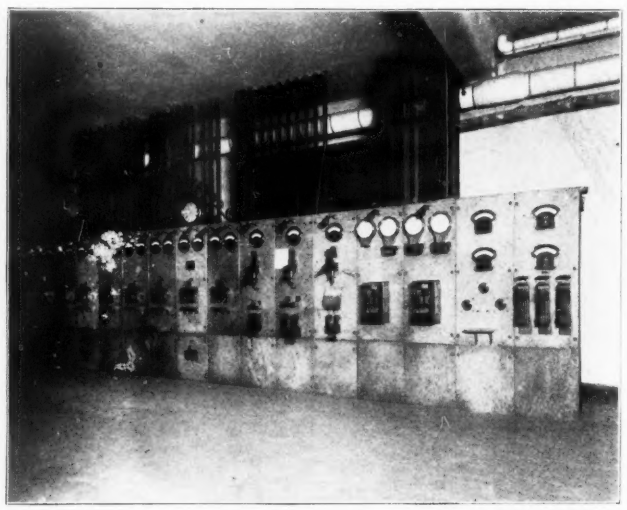
The amount of power and light which is required in the operation of this building can hardly be realized from a comparison with the requirements of an ordinary business building plant. The installation of this great plant is as perfect in its operation as the highest grade of mechanical skill in contrivances could make it. The electric current used for lighting and for power is developed by four direct-current generators, which, together with the motors used in the plant, were furnished by the Crocker-Wheeler Company, Old Colony building. The four generator units are shown in our illustration. The generators are of 150-kilowatt capacity each, generating current at 125 volts. They are direct-connected to Ball vertical cross-compound engines running at 225 revolutions a minute. The engines run non-condensing, the exhaust steam finding ready application for heating the building during the winter months. The Michigan system of forced lubrication is used, the oil being filtered in three Turner oil filters. A. S. Schulman, of Cincinnati, was the electrical contractor, and installed all the electrical machinery, wiring, etc.

THE BLOWERS.

Our illustration makes an interesting exhibit of a feature of the American Blower Company's plant. The equipment is installed in duplicate, giving assurance of the continuous service that is imperative in a building of seventeen stories where a lack of power means the lack of all the essentials of a modern office building. One of the units of this plant is a steam-driven fan 160 inches in diameter, consisting of a special narrow Housing 9-foot wheel driven by an 8x8-inch vertical—marine type—engine, capable of delivering 35,000 cubic feet of air per minute, 2 ounce pressure per square inch when running approximately at a speed of 450 revolutions per minute. The speed of this engine is controlled by a Tagliabue pressure regulator of the Roesch type, automatically by the steam pressure carried upon the water, thus controlling the air supply in accordance with the steam demands. The duplicate equipment consists of a 110-inch steel plate fan direct connected to a 110-volt direct current Crocker-Wheeler motor, having a Cutler hammer speed controller. The air supply delivered to the inlets of both fans is taken from above the boilers. The forced draft is delivered to the furnaces of the boilers by means of branch ducts having valves for controlling the supply which is taken from a common duct into which both fans deliver the air. Each fan is capable of delivering sufficient air for all boilers when operated independently. They can always be operated separately, one as auxiliary of the other. This plant is installed for the purpose of providing a forced draft for the Jones underfeed mechanical stoker.

HEATING AND VENTILATING PLANT.

In connection with the heating plant the hot blast over air coils is one of the systems in vogue throughout the two lower floors including the entrances. It is known



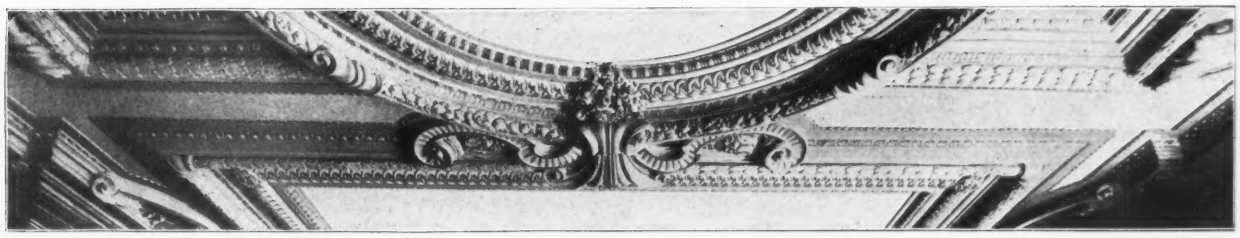
The Switch Board.

as the indirect radiation in distinction from the direct radiation. By this method fresh air is drawn from the outside by an electric fan and passes through a shower bath of water which cleanses it and increases the moisture. It then passes through the last series of high temperature coils and is forced out by the action of the fans throughout the lower floors of the building, all entrances and bank floors and is supplementary to the direct radiation which is installed for the whole building, and is rated at about 78,000 square feet of radiation. This great system required large numbers of high-class radiators and an enormous quantity of steam pipe, the length of this pipe being equivalent to forty-six miles of one inch pipe and would weigh two hundred and thirty-four tons.

All of the material for the direct radiation was furnished by the American Radiator Company, whose offices and salesrooms are at 382 Michigan avenue, City, occupying a large six-story building. Their works are situated at Detroit, Mich., Buffalo, N. Y., St. Louis, Mo., Springfield, Ohio, and Titusville, Pa. The indirect radiation plant coils and fans were furnished by the American Blower Company of Detroit. This company furnished

ART

SCIENCE



Modeling by McNulty Bros. DETAIL OF CEILING DECORATION IN DIRECTORS' ROOM

COMMERCE

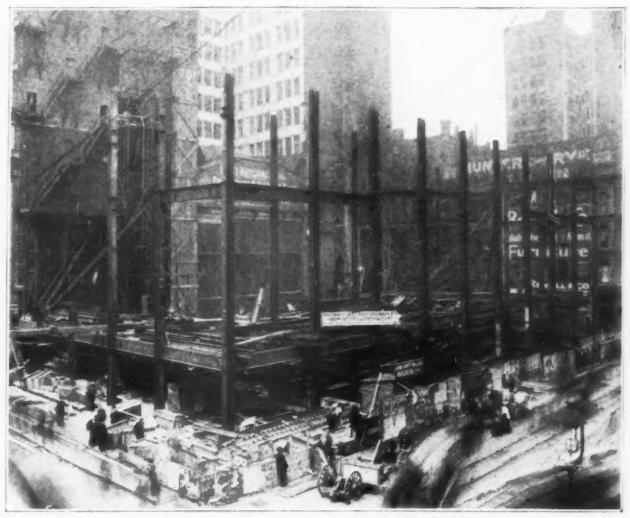
LABOR

PRESIDENT'S ROOM, FIRST NATIONAL BANK.

all the fans for the ventilation system in this building which is most complete as the air is changed through the building every few minutes, the safety vaults and toilet rooms being ventilated by a series of exhaust fans which operate to exhaust the vitiated air, and the pure air forces its way into the space thus made. This vitiated air is carried out through a flue upon the roof of the building.

SWITCHBOARD.

A switchboard of unusually attractive appearance has been installed, as shown in our illustration. Together



VIEW TAKEN MAY 7, 1904
STEEL WORK SET BY CHAS. VOLKMANN & CO.

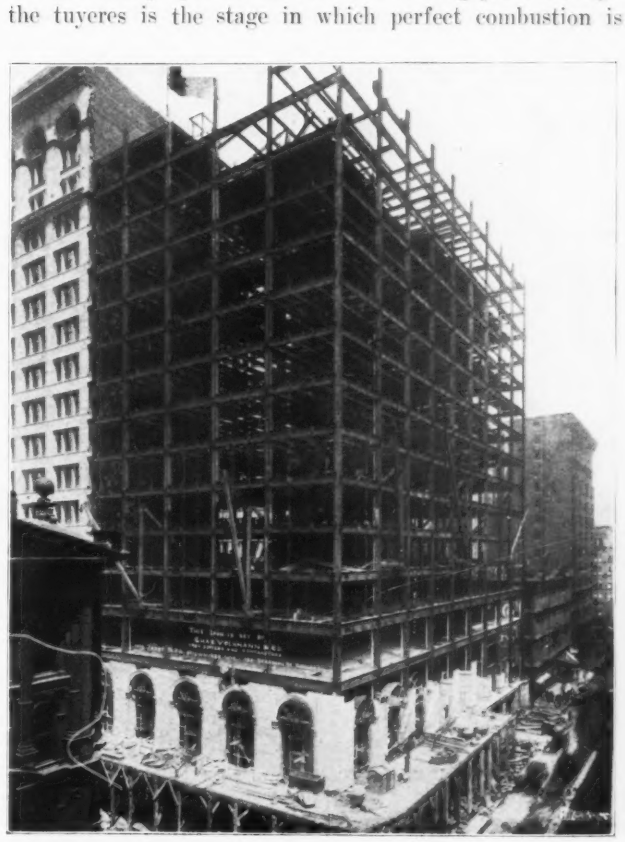
with the switches, it was furnished by the Crouse-Hinds Company. The board is of slate, handsomely polished and trimmed with copper molding. It contains twelve panels in all. The four at the farther end are the generator panels and are equipped with Weston ammeters, a Weston voltmeter being mounted on a bracket on the end panel. Next to the generator panel is a panel containing two Thomson recording wattmeters and one Bristol recording voltmeter. The remaining panels are for the various feeders, motor circuits, etc. Back of the board, as can be seen, are auxiliary panels for testing out circuits, for the fuses and for the meters. The circuits are all divided in shunt on the board, so that any of the circuits can be tested by test meters without interrupting the service. These tests are made to ascertain the cost of various operations, such as the pumping of water, the running of the ice machines, etc., and are useful to the operating engineer to enable him to run the plant in the most economical manner.

ELEVATORS.

Twenty-two elevators will be required to supply the needs of the tenants of the building. Twenty-one of these are hydraulic and one electric. The hydraulic elevators, supplied by the Otis Elevator Company, are on the high-pressure system, operating under a pressure of nearly 900 pounds to the square inch.

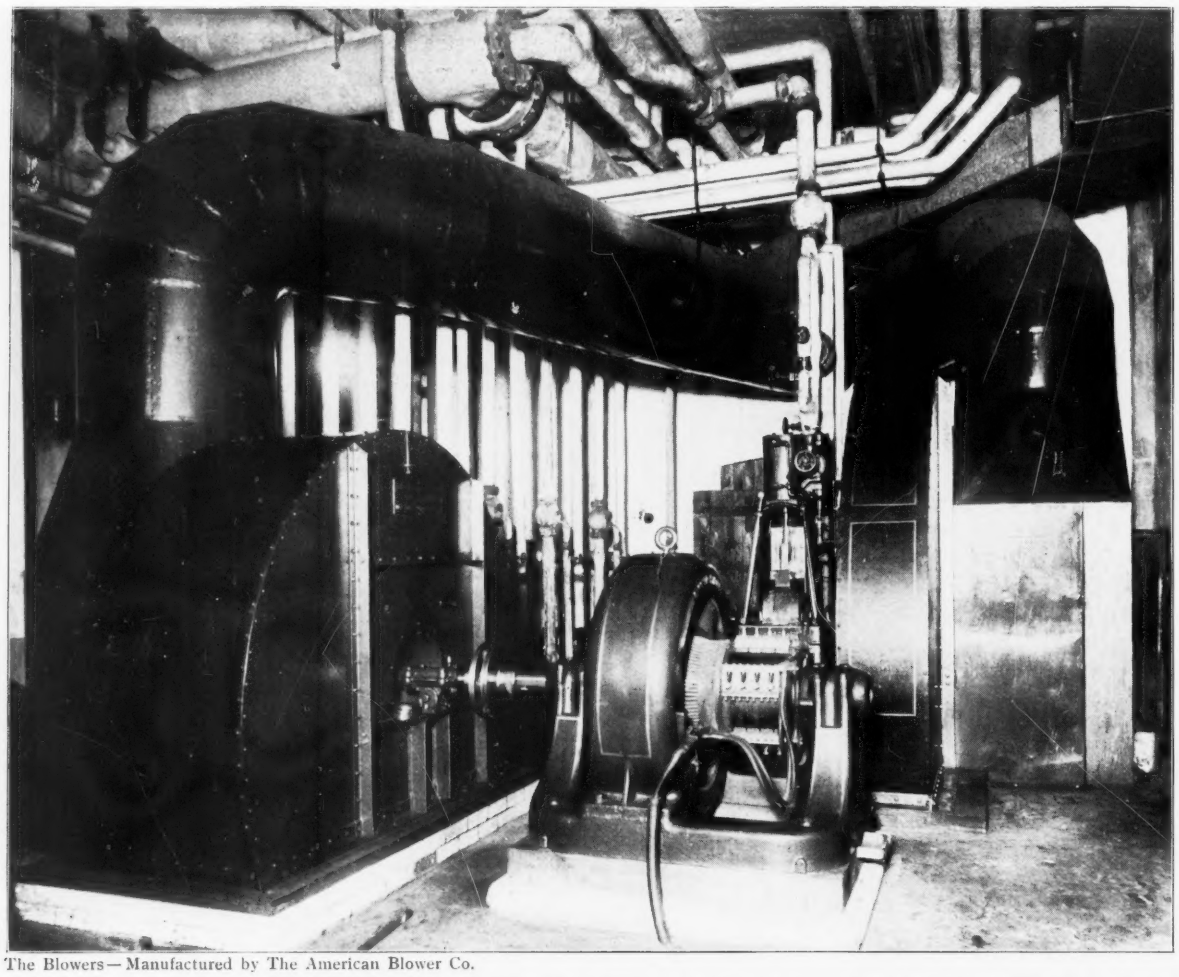
UNDER-FEED MECHANICAL STOKERS.

In keeping with other up-to-date labor and money saving appliances installed in the power plant of this big building the boilers are mechanically fired, each of the five units (total 1,850 h. p.) being equipped with three Jones under-feed mechanical stokers, a total of fifteen as shown in accompanying boiler room view. Economy in boiler plant operation, embracing saving in cost and utilization of fuel is the principal object attained, although the clear stack of this centrally located building serves as a daily reminder to thousands of passers by on the streets, that the perfect combustion being secured renders the making of smoke impossible. Without attempting an extended description of the apparatus we can convey a readily comprehendable idea of its operation in a few sentences. Outside the boiler is the steam cylinder, ram case and hopper; inside the furnace simply the retort or magazine in which the coal is held, and having hollow iron tuyeres around its upper edge through which air is forced above the green fuel and below the heavy body of incandescent fuel always carried in the furnace. Dead plates extend from either edge of the retort to the side furnace walls and between the stokers, there being three under each boiler, making an air tight chamber of what is usually denominated the ash pit in ordinary boiler practice. When descending through the hopper the coal falls to a position immediately in front of the ram, which in its forward stroke carries a fixed quantity into the furnace. This introduction of fuel is always from beneath, whereby this system of firing derives its name of "under-feed" in contra-distinction to the methods usually employed. Repetition of this process at frequent intervals elevates the green coal to a position in which it passes through a process of coking because of the heat generated in the incandescent mass of fuel lying at the top, as described above. The point at which the gases are being released and proper admixture of air taking place through the tuyeres is the stage in which perfect combustion is



VIEW TAKEN JUNE 9, 1904
STEEL WORK A MONTH LATER

secured and the making of smoke effectually prevented. In this method of firing any grade of coal from the cheapest slack up through the various grades to the most expensive lump, can be used without any change whatever in the operating mechanism of the stoker.



The Blowers—Manufactured by The American Blower Co.

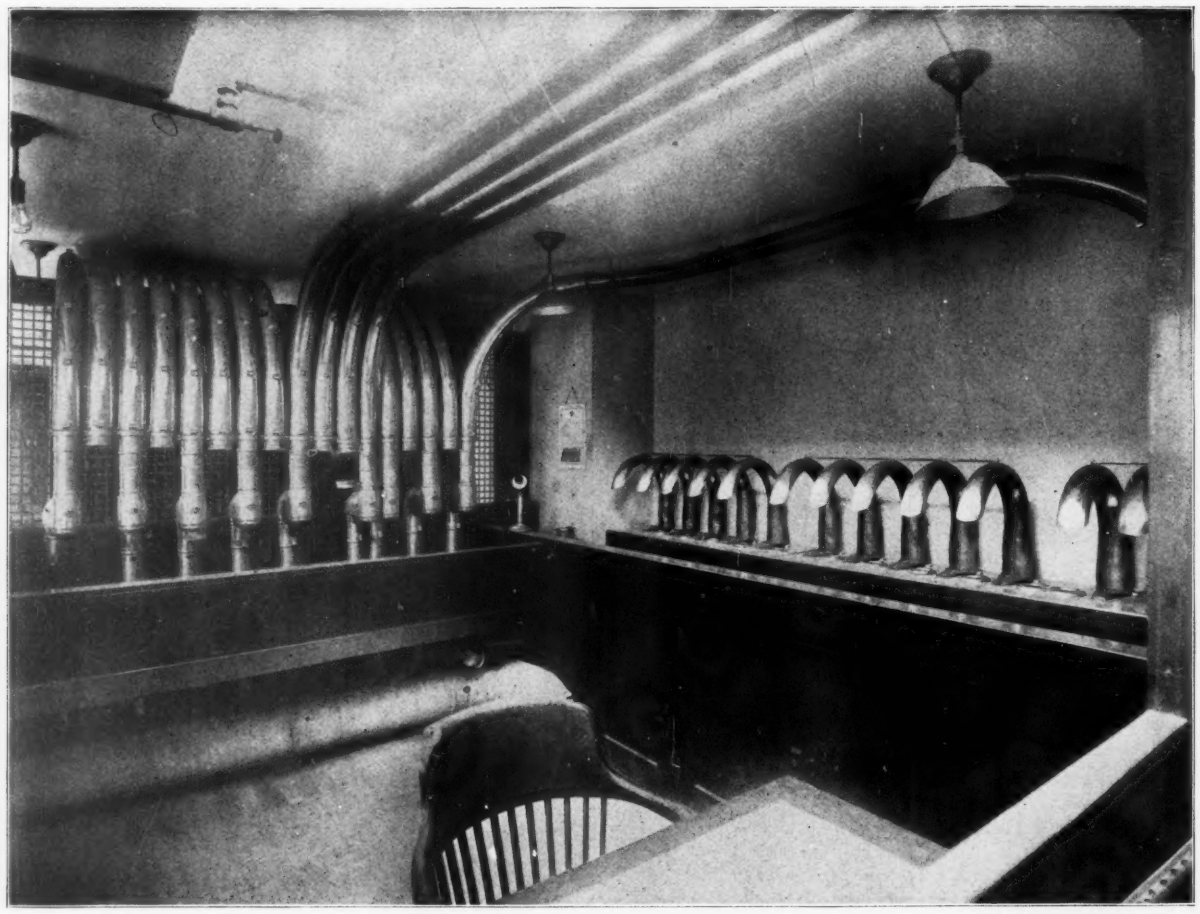
The Jones Under-Feed Mechanical Stokers

THE POWER PLANT, FIRST NATIONAL BANK BUILDING

Generators and Motors
Manufactured by Crocker-Wheeler Company

THE POWER PLANT, FIRST NATIONAL BANK BUILDING

One of the most interesting features and at the same time one of the distinctive advantages of this system of stoking is the absolute control maintained over furnace operating conditions. By means of an automatic attachment intervals of forward movement of the ram are controlled, thereby fixing the quantity of fuel introduced into the furnace during a given period. To supply air for combustion in quantity proportionate to amount of fuel being consumed, and to meet changing conditions in loads, the output of the blower is automatically increased or diminished as required. This is brought about by causing the steam pressure to regulate the speed of the engine driving the blower through a Tagliabue regulating valve. Proportioning the fuel supply and the air supply in this manner serves to promote a practically perfect combustion, a stage in which the maximum of economy as well as efficiency is realized, at the same time accounting for the smokeless chimney. The apparatus was installed by the Under-Feed Stoker Company of America, whose general offices occupy an extensive suite in the Marquette building, Chicago, and in addition to which a large number of branch offices and sales agencies are maintained in all the principal industrial centers of this country and Canada.



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